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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences



In re Patent Application of

Atty Dkt. 839-820

C# M#

WANG

Group Art Unit: 1725

Serial No. 09/735,503

Examiner: L. Tran

Filed: December 14, 2000

Date: November 3, 2003

Title: METHOD USING SECONDARY ORIENTATION TO TUNE BUCKET NATURAL
FREQUENCY

Mail Stop Appeal Brief - Patents

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

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☐ Correspondence Address Indication Form Attached.

☐ **NOTICE OF APPEAL**

Applicant hereby appeals to the Board of Appeals from the decision dated _____ of the Examiner twice/finally rejecting claims _____ (\$ 330.00) \$

☐ An appeal **BRIEF** is attached in triplicate in the pending appeal of the above-identified application (\$ 330.00) \$ 0.00

☐ Credit for fees paid in prior appeal without decision on merits -\$ ()

☒ A reply brief is attached in triplicate under Rule 193(b) (no fee)

☐ Petition is hereby made to extend the current due date so as to cover the filing date of this paper and attachment(s) (\$110.00/1 month; \$420.00/2 months; \$950.00/3 months; \$1480.00/4 months) \$
SUBTOTAL \$ 0.00

☐ Applicant claims "Small entity" status, enter 1/2 of subtotal and subtract
☐ "Small entity" statement attached. **SUBTOTAL** \$ 0.00

Less month extension previously paid on -\$ (0.00)

TOTAL FEE ENCLOSED \$ 0.00

Any future submission requiring an extension of time is hereby stated to include a petition for such time extension. The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our **Account No. 14-1140**. A duplicate copy of this sheet is attached.

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NIXON & VANDERHYE P.C.
By Atty: Alan M. Kagen, Reg. No. 36,178

Signature: Alan M. Kagen

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REPLY BRIEF

In reply to the Examiner's Answer dated September 3, 2003, Appellant herein submits this Reply Brief under 37 C.F.R. §1.193(b)(1).

In paragraph (10) of the Examiner's Answer, the Examiner maintains that "it is inherent that every time when Gemma et al. arrange the crystal seed to a different orientation, at any angle, the natural frequency has been tuned to a different value." Although Appellant may not necessarily disagree with this statement, Appellant respectfully submits that even assuming its accuracy, the claimed invention does not result. As noted previously, in the Gemma patent, the method to optimize fatigue is to set the secondary orientation such that the orientation is tangent to the blade surface in the critical crack prone regions just behind the leading edge of the airfoil at about 40-80% of

the airfoil span. The effect of the crystal orientation on natural frequency is irrelevant to the Gemma method, resulting in some random, non-specific value. The claimed invention, in contrast, with reference to claim 1 for example, defines a step of tuning a natural frequency of the turbine bucket . . . by placing a crystal seed along a desired direction . . . to thereby effect a desired percentage change in the natural frequency of the turbine bucket. Thus, by this invention, a specific natural frequency percentage change can be effected by placing the crystal seed along a specific direction. This direction is known and the result is known and not merely a random consequence of actions toward another goal as in the Gemma method.

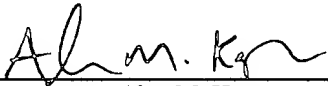
The Examiner's answer further contends that "Gemma et al disclose orienting the single crystal in a configuration to provide a better fatigue resistance, similar to the orientation described in applicant's specification, pertaining to the tuning of the natural frequency." Again, this conclusion does not result from the Gemma patent disclosure. That is, even assuming the Gemma method results in better fatigue resistance, nowhere does Gemma even remotely disclose that a natural frequency of the turbine bucket is "tuned" to a desired value. Indeed, as also discussed in detail in the Appeal Brief, Gemma's invention is not to control the secondary orientation but to use the secondary orientation to reach a certain objective (to improve fatigue resistance). Optimizing frequencies, however, cannot be derived from optimized fatigue resistance. The two methods are independent and distinctly different from each other as discussed previously.

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For the reasons discussed herein and in the Appeal Brief, Appellant submits that the application is in condition for allowance. Prompt reversal of the final rejection and passage of the subject application to issue are earnestly solicited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

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